

## § 7.101

## 30 CFR Ch. I (7–1–10 Edition)

inches to the lowest water level that passed the explosion tests.

(v) A determination shall be made of the maximum grade on which the wet exhaust conditioner can be operated retaining the flame-arresting characteristics.

(b) *Acceptable performance.* The explosion tests shall not result in any of the following—

(1) Discharge of flame or glowing particles.

(2) Visible discharge of gas through gasketed joints.

(3) Ignition of the flammable mixture in the test chamber.

(4) Rupture of any part that affects the explosion-proof integrity.

(5) Clearances, in excess of those specified in this subpart, along accessible flame-arresting paths, following any necessary retightening of fastenings.

(6) Pressure exceeding 110 psig, unless the intake system or exhaust system has withstood a static pressure of twice the highest value recorded in the explosion tests of this section following the static pressure test procedures of § 7.104.

(7) Permanent distortion of any planar surface of the diesel power package exceeding 0.04-inches/linear foot.

(8) Permanent deformation exceeding 0.002-inch between the plates of spaced-plate flame arrester designs.

[61 FR 55518, Oct. 25, 1996; 62 FR 34641, June 27, 1997]

### § 7.101 Surface temperature tests.

The test for determination of exhaust gas cooling efficiency described in § 7.102 may be done simultaneously with this test.

(a) *Test procedures.* (1) Prepare to test the diesel power package as follows:

(i) Perform a detailed check of parts against the drawings and specifications submitted to MSHA under compliance with § 7.97 to determine that the parts and drawings agree.

(ii) Fill the coolant system with a mixture of equal parts of antifreeze and water, following the procedures specified in the application, § 7.97(a)(3).

(iii) If a wet exhaust conditioner is used to cool the exhaust gas, fill the exhaust conditioner to the high or nor-

mal operating water level and have a reserve water supply available, if applicable.

(2) Tests shall be conducted as follows:

(i) The engine shall be set to the rated horsepower specified in § 7.97(a)(2).

(ii) Install sufficient temperature measuring devices to determine the location of the highest coolant temperature. The temperature measuring devices shall be accurate to  $\pm 4^\circ\text{F}$  ( $\pm 2^\circ\text{C}$ ).

(iii) Operate the engine at rated horsepower and with  $0.5 \pm 0.1$  percent, by volume, of methane in the intake air mixture until all parts of the engine, exhaust coolant system, and other components reach their respective equilibrium temperatures. The liquid fuel temperature into the engine shall be maintained at  $100^\circ\text{F}$  ( $38^\circ\text{C}$ )  $\pm 10^\circ\text{F}$  ( $6^\circ\text{C}$ ) and the intake air temperature shall be maintained at  $70^\circ\text{F}$  ( $21^\circ\text{C}$ )  $\pm 5^\circ\text{F}$  ( $3^\circ\text{C}$ ).

(iv) Increase the coolant system temperatures until the highest coolant temperature is  $205^\circ\text{F}$  to  $212^\circ\text{F}$  ( $96^\circ\text{C}$  to  $100^\circ\text{C}$ ), or to the maximum temperature specified by the applicant, if lower.

(v) After all coolant system temperatures stabilize, operate the engine for 1 hour.

(vi) The ambient temperature shall be between  $50^\circ\text{F}$  ( $10^\circ\text{C}$ ) and  $104^\circ\text{F}$  ( $40^\circ\text{C}$ ) throughout the tests.

(b) *Acceptable performance.* The surface temperature of any external surface of the diesel power package shall not exceed  $302^\circ\text{F}$  ( $150^\circ\text{C}$ ) during the test.

### § 7.102 Exhaust gas cooling efficiency test.

(a) *Test procedures.* (1) Follow the procedures specified in § 7.101(a).

(2) Install a temperature measuring device to measure the exhaust gas temperature at discharge from the exhaust conditioner. The temperature measuring device shall be accurate to  $\pm 4^\circ\text{F}$  ( $\pm 2^\circ\text{C}$ ).

(3) Determine the exhaust gas temperature at discharge from the exhaust conditioner before the exhaust gas is diluted with air.

(b) *Acceptable performance.* (1) The exhaust gas temperature at discharge